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No. 21

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INTERNATIONAL AFFAIRS

STATUS REPORT: AIRBUS A 300/A 310

Gelsenkirchen AEROKURIER in German Mar 80 pp 314-317

[Article by Ralf Nolting]

> [Text] Some 12 years after the start of the program and 7 years after the first flight of the A 300, Airbus Industry has become number two in the world market for passenger planes, still ahead of McDonnell Douglas and Lockheed, and in current sales just behind Boeing, the giant in airplanes. In 1979 Airbus salesmen negotiated a record number of 221 giant aircraft with airlines throughout the world (133 firm orders, 88 options), which was twice as many as the year before. Some 92 of the successful deals were for for A 300 (70 firm orders and 22 options), 129 for the A 310 (63 firm orders and 66 options). Thus, Airbus Industry has a 39-percent share of the market for short- and medium-range jets. The intention is to meet up to 25-30 percent of the total requirements for civilian airplanes in the 1980's. For the next 15 years, Airbus Industry wants to have met the requirements for aircraft of the A 300 and A 310 class numbering about 2,600 planes. Of course, these estimates leave Boeing and its 767 with opportunities to market only about 1,700 planes. The current problem at Airbus Industry is the moderate production rate.

The new 13 new customers which Airbus Industry acquired in 1979 (advertising slogan: "Even more tails [sic] to tell") include Air Afrique, Garuda, Swissair, Cruzeiro, KLM, Singapore Airlines, Egyptair, Laker, TOA, Martinair, Sabena, Trans-Australia and two companies not yet identified. With the order from Trans-Australia the "widebody with the stilt-like legs" is now represented on all five continents. But the Toulouse sales group seems to have been most successful in Europe and the Far East. Of the total of 133 firm orders 86 were recruited from Europe and 34 from the Far East. The regional sales statistics list Africa with four orders, the Middle East and Latin Ameria with three each and North America with two. At the beginning of January 1980 the Australian domestic company, Trans-Australian Airlines (TAA), became the 31st Airbus customer. This carrier placed a firm order for four A 300 B4-100 and took two options. The first plane for TAA will be delivered in summer 1981, the fourth in 1983. TAA plans to use the Airbus on routes with high passenger density. These are primarily routest between Melbourne, Sydney, Brisbane, Canberra, Adelaide and Perty.

Flying Piggy Bank

Last year a total of 25 Airbuses were delivered to 10 customers. Of these, 17 went to 6 companies which were already operating with the A 300: 3 to Air France, 3 to Lufthansa, 1 each to Korean and Indian Airlines, 4 to Thai International and 5 to Eastern Airlines. Four new customers divided up the remaining 8 planes among themselves: 2 each for Olympic, Hapag Lloyd, Malaysian Airline System and Philippine Airlines.

Eastern Airlines (25 firm orders, 9 options) now has 14 Airbuses in operation. No fewer than 14 cities within the United States are served by them. These include definite short routes such as New York-Philadelphia or Miami-Nassau, but also transcontinental routes such as Atlanta-San Francisco. Meanwhile, two A 300 B2-200 are being used in shuttle service between New York and Boston. Both planes were previously used by Iran Air in the framework of a wet lease contract. As soon as Easterns' Airbuses have approval to use the downtown airport in Washington, shuttle service will be extended to the New York-Washington route. For Eastern the Airbus is the most economical aircraft in its fleet which numbers 250(!) planes. The 25-percent lower fuel consumption per passenger mile, as Eastern President Frank Borman had said quite some time ago, is reflected in an annual saving of fuel costs amounting to several umpteen million dollars. At Eastern they speak of the "flying piggy bank."

Now 'Pratt' Is Getting Into the Act With Airbus

In mid-January 1980 the first A 300 B2 was delivered to SAS. It was the first Airbus for Scandinavian Airlines and the first Airbus with Pratt & Whitney engines. The planning called for delivery of the airplanes in December 1979. But then problems with the guaranteed performance arose which could not be solved so quickly. Airbus and Pratt & Whitney are presently working to lower the specific fuel consumption for the Airbus JT9D enging. So far, however, the only savings to emerge are at the one-percent mark. According to the talk in Toulouse, delays such as these are nothing out of the ordinary when "adapting" new engines to an aircraft type. In mid-February, after delivery of the second airplane, SAS initiated Airbus service between Copehhagen and London. Stockholm-Copenhagen and other Scandinavian cities will soon follow. SAS wants to have its Airbuses in the air about 8 hours per day.

One Airbus-Three Engines

Equipping the SAS Airbuses with Pratt & Whitney engines is representative of a whole series of technical innovations in the Airbus program during the past year. Airbus Industry and Rolls Royce agreed at the Paris Aerosalon to also offer the A 300 with the British engine RB211. Thus, both the A 300 and A 310 are available with engines from all three large manufacturers. This flexibility in outfitting with engines can expand the circle of potential Airbus customers: the airlines can have the Airbus with exactly the engine that is most easily replaceable within its fleet.

Into the Heavy Class With the 'Dash-200'

In April 1979 the first "B4-200" was delivered to Air France. The "Dash-200" can transport larger payloads over greater distances because of a 165-ton maximum takeoff weight. The following are examples of routes: Paris-Dakar, Frankfurt-Bahrein, Jakarta-Perty, New York-San Francisco, Miami-Belem and Caracas-Rio. These are routes which thus far have been served by giant aircraft having three or four engines.

Convertible Airbus: Having It Both Ways

On 18 December 1979 the combined passenger-freight version received type approval. The C4 has a large cargo door on the left side of the forward fuselage section. The first A 300 C4-200 (same weights as the B4-200: maximum takeoff weight 165 tons, maximum landing weight 132 tons, maximum zero fuel weight 124 tons) was delivered to Hapag Lloyd, the German charter airline, on 20 December 1979. Previously Hapag operated with six A 300 B4 planes.

Production Rate Is the Headache

Some 221 Airbuses were sold and 25 delivered in 1979--a total of 404 orders and about 85 aircraft delivered. These figures, when compared with the monthly production rate of just three units, reveal the problem that the four-country consortium has to cope with: in contrast to the enormous success in sales (Airbus head Lathiere says: "In a general recession our pilots will be the last to be grounded") the production figures are too low. And it is also pointless for Lathiere to plead for people not to compare the 3 Airbuses built each month with the 30 produced at Boeing during the sameperiod. The claim "second biggest" in the world market and the reality of assembling only three airplanes per month simply to not gibe. This has also been recognized in Toulouse. And so there is a serious effort to raise the production rate to 4 units by 1981, 5.5 by 1982, 6.5 by 1983, 8 by 1984 and 10 by 1985; for the present, this last figure is viewed as the ultimate monthly target.

More Investment--More Personnel

In order to achieve this goal, which many insiders call fairly ambitious, substantial investments are, of course required: Aerospatiale alone is investing Ff400 million in the A 300/A 310 program this year. At MGC [Messerschmitt-Boelkow-Blohn] in Hamburg the amount will be DM400 million over the next 4 years. British Aerospace--which butted in just last year--will have a commitment of 300 million British pounds in the project by 1984. But raising the production rate is not only a financial problem. At present, a total of about 17,000 staff employees are working on the Airbus program in all the partner firms. In 1985, if 10 Airbuses are to be passed through the final assembly plant each month, the number of workers must not be fewer than 45,000, that is, one-third of all employees who are presently available overall to the Airbus partner companies. Two-thirds of the personnel requirements will be met by taking specialists form other programs (at Aerospatiale, for example, from the Concorde), one-third of the required staff employees, however, must be added from outside. Because of the gradual "rise" in the number of staff employees the training of the individuals is to be maintained. "We have no intention of risking the high level of quality which we have," is Felix Kracht's argument, senior vice-president for production. He must see to it--and in this his interests differ from those of the salesmen--that the manufacturing capacities are fully utilized for a longer period of operation. Felix Kracht says: "For us it is extremely important not to expand capacities excessively because we do want to amortize them in a reasonable manner." Thus, it must be understood that for the present a second assembly line cannot be considered. A 300 and A 310 will also have to share this one line. Even the stretched version of the Airbus, as must undoubtedly be assumed, will be assembled there. This does appear to be possible, if one keeps in mind that at the present assembling is done only during day shifts. In 1985, if 10 Airbuses are assembled each month, there will have to be at least two shifts.

At the Sales Sound Barrier in 1990

If manufacturing capacities should be increased as planned, then by the -eginning of 1985 all aircraft presently on order would be delivered. However, up to that time if airlines throughout the world order each year just half of the 1979 figures, then in 1985 Airbus Industry would be pushing along an order cushion of about 500 planes. On the basis of the capacities planned for 1985, these would be built and paid for in 4 additional years. In 1990 then it would be possible to reach the figure of about 1,000 Airbuses sold, the limit, beyond which, according to present estimates, the program could get in the black.

Airbus Family Planning

The old manufacturer's saw also applies to Airbus Industry, which says that in thelong run economically only that bird is crowned by success which can be adapted flexibly to prevailing and diverse market requirements. The topic is the so-called family philosophy: and as far as the Airbus family is concerned, people are now seeing things a good deal more clearly. The ultimate goal is first to raise the production rate of the three existing 300 versions (B2, B4, B4C), from the current situation ob barely 3 units per month to 5 in 1982. Then, if A 300 and A 310 will share the assembly line, the volume can be doubled by 1985 to 10 Airbuses per month.

'A 310: The Fat One For the Thin Routes'

The immediate goal is to put the A 310 on the market by 1983, the "widebody for the thin routes." The choice of equipment for the 200 seat plane with the supercritical wing has already been made. At present, models of the 310 are undergoing intensive wind tunnel tests. The Airbus partner firms are already building partial mockups, prototypes and tools. In spring 1982 the 310 is to be airborne, type approval is anticipated for spring 1983. In addition to the A 310, which will hold up to 255 passengers in the so-called high density seating configuration, there will also be a 300 seat version with increased range. In addition, a convertible version is planned which can be used as a cargo plane. The striking technical feature is the supercritical wing which, in contrast to wings of comparable 200 to 250 seat planes, has a one-third smaller wing area. This lowers the structural weight of the wing by almost 3 tons.

New: 'Dash-600'

Stretched, but not lengthened, is how the Airbus designers conceive of a new version of the European widebody jet which could be available in 1983 or 1984. In the case of the A 300-600 this trick is to insert, behind the emergency exits over the wings (overwing emergency exits), an additional fuselage section of the same type, elminating a similar one at the end of the fuselage below the rudder unit. By means of this "fat tail"--which by the way will be the dame as in the A 310--room will be created in the aft part of the cabin for 8-12 more seats. The aft cargo compartment will also be enlarged in this way. Even if there was nothing specific to be learned in Toulouse, it can still be estimated that the "Dash-600" will operate with larger weights. Improvements in details and the additional passenger capacity should, according to the data provided from the Airbus managers, lower the costs per passenger mile somewhat. The fuel saving per passenger seat is estimated at roughly five percent vis-a-vis the B4.

The next really new project--apart from the "fat tail" Dash-600, an only slightly modified B4--is an A 300, stretched by about 30 feet (9.15m) with the type designation TA9 (TA stands for twin aisle--two aisles in the passenger cabin). The TA9 at Airbus Industry was formerly known as A 300B9. In the words of Airbus president Lathiere this project is encountering keen interest among the airlines. This airplane is favored by the companies even more than the long-range version TA11 or the JET projects (they are now called SA = single aisle). According to the current state of planning, the TA9 would be classified, from the point of view of passenger capacity (3y0 seats with standard seating arrangement), together with the McDonnel Douglas DC-10 or Lockheed's L-1011. Moreover, it would be the only twin-engine medium-range airplane with the seating capacity of the giant tri-jets already in service. The expansion of capacity is accomplished by two 15-foot long fuselage sections. They are placed behind the forward lower area cargo door and behind the wings.

The TA9 could operate with seat mile costs which are about 25(!) percent lower than those the Airbuses now in service.

Further along in the Airbus plan is the TA11 (formerly A 300 B11), a widebody for long distances of 10,000-11,000 km. In contrast to the versions of the Airbus which are already flying, the TA11 would have a shorter body and a larger wing span. Of course, market prospects do not look particularly rosy. The demand for such an airplane is estimated at only 200-250 units worldwide, too few in order to justify the substantial investments to start up the program. Although the original studies for the long-range Airbus were based on a four-jet craft, now recent discussion is focussing on equipping it with three engines.

Way down on theproject wish list of the "Airbus people" is the narrow-bodied 120 to 170 seat plane. Previously called JET (JET = Joint European Transport) these studies now are classified as SA = single aisle. Two rows of seats with three seats each are separated by an aisle. Originally the JET-project was to be started before the A 310, but then the market situation required beginning the A 310 program. In addition, it is assumed at Airbus that the market for 150 seat craft is sufficiently taken care of by proven designs, for example, the Boeing 737-200 or the DC-9 Super 80. Moreover, these designs are now built with relatively low production costs. If Airbus Industry wanted to get into this market with JET (or now SA1, SA2), then the new bird would have to make a giant stride forward technically. In Toulouse there is talk in this connection of a "supertechnology." But something like that can only be achieved with immense investment costs which Airbus Industry at present is hardly in a position to raise. Thus, the lights are on yellow for the "Jet."

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BRIEFS

AIRBUS PROGRAM REVIEWED--From 1969 to 1980 total investments of the Airbus program reached 7 billion francs, of which a little less than 3 billion were made by AEROSPATIALE /National Industrial Aerospace Company/. This year AEROSPATIALE will invest 400 million francs compared with 278 million in 1979 and 45 million in 1978. But the point at which it begins to make a profit will not be reached before 1985, and then only provided at least 800 Airbuses are sold. There are currently 90 subcontractors working on Airbuses in France, and 80 of these are in the Toulouse area alone. The other partners will also make substantial financial contributions: 400 million DM to be invested by MBB /Messerschmitt-Baldow-Blohm/ from 1980 to 1984 and 300 million pounds by British Aerospace by 1984. At present, 17,000 persons are employed in the manufacture of A300 and A310 Airbuses. By 1985 this figure will increase to between 40,000 and 45,000. In 1979, 221 Airbuses were sold representing 26 percent of the value of the world market for civilian equipment, 42 percent of the number of large carriers and 34 percent of their value. Last year, 25 Airbuses were delivered to 10 companies, bringing the number of aircraft already delivered to 81. /Text/ /Paris INDUSTRIES & TECHNIQUES in French 28 Feb 80 p 11/ 8568

CSO: 3102

DENMARK

MUUS ADVOCATES ESTABLISHMENT OF ENERGY RESEARCH COUNCIL

Copenhagen BERLINGSKE TIDENDE in Danish 10 Feb 80 p 8

[Reportage by Jens J. Kjargaard]

[Text] "Only an energy research council can guarantee the impartial and equitable distribution of government funds," according to the chairman of the Research Councils' Energy Committee.

"Energy Minister Poul Nielsen's idea to establish a research secretariat in Riso is an excellent one, but it is not enough. We must also have an energy research council that can provide ideas."

This is how strongly Lauris T. Muus, physics professor at Aarhus University and chairman of the Research Councils' Energy Committee, feels about the matter.

"Government officials consider issues, affectionately speaking so we cannot expect visionary ideas from a secretariat. However, we can demand that of a council, whose members can only serve a few years. We have no use for popes who remain in their offices until they are carried out.

"We are now entering a decade in which the results of short-term research projects should begin to yield solutions to our nation's energy problems, and we ought to face the fact that we must develop research planning and leadership in order to meet the urgent demand for impartiality and latitude in this area of expertise.

"We must establish an energy research council in connection with the Energy Ministry that can guarantee the fulfillment of these demands through the distribution of government financial aid to individual projects in this area."

L.T. Muus believes that Danish energy research has a good chance of providing important, practical benefits to our own energy supply as well as to the new export possibilities, not least in the sale of know-how. But two barriers must be removed in order to make that possible.

First of all, more money must be made available. Large amounts of public funds are being made available by all industrial nations for energy research and development. In comparison, Danish grants should be no less than 200 million kroner annually. Secondly, we must establish an energy research council. Danish energy research covers a large spectrum of projects, carried out by people from widely different backgrounds and with different connections.

Only a broadly representative council will have the credibility and the impartiality necessary to mobilize and maintain the active participation of these researchers, L.T. Muus pointed out.

Energetic Round Trip

"We have an acute problem with respect to financing because the Energy Ministry has only 100 million kroner at its disposal for energy research in 1980. This money will only cover the necessary extensions of a number of projects that were started under the Trade Ministry's phase one and two, totaling 238.5 million kroner. The Energy Ministry will not be able to authorize any new projects in 1980, in spite of the fact that it has already approved qualified plans worth a considerable amount of money," said L.T. Muus.

"The Research Councils and the Technology Council together issue grants of a maximum 10 million kroner. Thus it is necessary to utilize all sources of financing as effectively as possible. For this reason the Research Councils' Energy Committee has actively sought to come up with qualified project proposals in connection with EEC's second 4-year energy research and development program, for which the deadline was 30 November."

Muus was given a 6-month sabbatical from Aarhus University with stipends from the technical and natural science research councils. Together with administrative assistant Soren Guldborg at the Research Secretariat, Muus has traveled around the country conferring with a number of institutions and businesses, which may be understood to have the potential to carry out research projects that fall within the framework of the EEC program.

Guldborg and Muus were able to provide information about the framework of the EEC program several months prior to its official adoption, and could offer applicants extensive guidance relative to technical formulations and budget plans. This effort, no doubt, effected the 50 percent subsidy by the EEC. At the end of the 30 November deadline, altogether 40 applications, valued at 120 million kroner, had been submitted to the EEC.

"Based on Denmark's contribution to the EEC, we expect to get at least 20 million kroner in subsidy," said Muus. "Since the EEC subsidizes 50 percent of all project costs, we would have had to submit applications worth at least 40 to 50 million kroner. However, the applications are worth more than twice that amount. We can also show that the average quality of our applications is considerably higher than it was under the last 4-year EEC program.

"Thus, the situation now is that we have a good chance of getting more than our 'share' this time, compared to the situation 4 years ago when we were barely able to clinch our 'share' at the last minute. At that time we were also reproached by officials in the EEC for such a weak effort on Denmark's part!

"Of course, the number of applications shows quite clearly that we have the capacity to meet a Danish research program worth 200 million kroner with qualified projects in the area of energy research and development."

Unfortunate Danish Arrangement

"Are the projects under the Energy Ministry and the EEC thoroughly coordinated?"

"Yes, I believe so, absolutely. As in other EEC countries, the EEC projects are viewed as an extension of the national projects. Both programs are largely addressing the same problems and the same energy researchers. However, projects under the EEC are directed more toward research, while those under the Energy Ministry are in the direction of development.

"Unfortunately, the Energy Ministry--like the Trade Ministry earlier--has maintained an arrangement whereby the EEC subsidy toward mutual energy projects falls to the government treasury, according to the so-called "gross principle." This is obviously an unfortunate arrangement if, in fact, we want to promote energy research. It is clear that energy researchers who are aided by the Energy Ministry do not feel strongly motivated to submit new applications to the EEC and get involved in drawing up special budgets and accounts, when the eventual EEC subsidy just disappears in the government treasury. In my opinion, we need to change this arrangement so that the EEC subsidy falls to the project as an additional contribution--possibly against the advance reduction of the Energy Ministry's developmental aid," said L.T. Muus.

Emotional Debate

"Money was the first barrier. The other was the establishment of an energy research council. Why is that necessary?"

"As I said earlier, Danish energy research covers a broad spectrum of activities, from energy-saving initiatives to the utilization of biomasses, sun and wind, to storing hydrogen in alloys as well as nuclear and fusion research. There is no single institution or organization in this country which can reliably assume the responsibility of objectively evaluating the quality of individual energy research projects and their potention importance with respect to our energy supply. This problem cannot be solved by the Research Councils' Energy Committee or by Riso," said L.T. Muus. "We are still reminded of the debate that ensued last November and the beginning of December as a result of the role which Riso was asked to play in selecting energy research projects for the Energy Ministry's 1980 action program. This debate was marked by emotional overtones, which were unpleasant as well as predictable and decidedly an unnecessary obstacle to good cooperation in the area of Danish energy research."

Consumers on the Council

"On the other hand, we have had positive experiences with energy councils composed of members selected among experts from different fields. Service should be limited to 3 years, with the possibility of serving one more term, so that the research council does not develop into an assembly of 'popes.' Such an energy council should be headed by a chairman, whose responsibilities might be to prepare status reports and project outlines. A status report, evaluating already completed energy research, is, of course, a prerequisite for the project outline."

"Who should serve on the energy research council?"

"It should be made up of natural scientists and engineers who are actively involved in energy research and connected with research institutes, power companies, producers of indirect heat or industry. It should also include economists with experience in energy planning so as to take care of overall economic considerations," L.T. Muus answered.

"Should consumers be represented?"

"Yes, to the extent of obtaining new points of view of importance to research. In this connection we could mention the Home Economics Council. Of course, we must differentiate between energy research and energy policy."

"Can Danish energy research yield significant contributions at a time when all industrialized nations are launching a massive effort in this area?"

"As in all other areas of research, we must effectively utilize the knowledge and the results achieved abroad from energy research. Independent energy research is one of the requisities for that. There are also areas in which Denmark has made contributions of international interest. I can mention methods of saving energy in the area of home heating, indirect heat technology, utilization of biomasses, construction of rotors for large windmills and the use of heat pumps.

"It is my firm conviction that purposeful Danish energy research will result in further contributions to new energy technology in the next 10 years and thus have a positive influence on employment and the foreign currency balance," L.T. Muus concluded.

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CSO: 3102

DENMARK

CONSUMER TIPS GIVEN ON PURCHASING COMMERCIAL WINDMILLS

Copenhagen BERLINGSKE TIDENDE in Danish 11 Feb 80 p 5

[Reportage by Lisbeth Nebelong]

[Text] The demand for windmills is steadily growing. More and more people are thinking in terms of wind power as oil prices go up. But even though it is more advantageous than ever to invest in wind power today, you can go completely wrong if you do not look out before deciding to buy a windmill on the market.

In the last 2 years a couple of hundred windmills have been set up in Denmark, with more or less success. People have bought them rather by chance because of the lack of accurate calculations showing whether wind power can pay for itself at all, as far as the individual is concerned. Some have purchased windmills that are too low and thus make poor use of the wind; others have bought mills that were not tested sufficiently with respect to safety and, for some people, things went completely wrong when the blades broke off in too strong a wind and the owner of the windmill demanded compensation; the manufacturer had gone bankrupt and, regardless of warranties, the owner could not get his money back.

That sort of thing does not have to happen today. In the fall of 1978 a number of windmill owners joined together and formed the organization Danish Wind-Power Service, which has two purposes: To protect the owners' mutual interests and, not least, to keep future windmill owners from being cheated.

Twenty-five Types of Windmills

Today there are 13 windmill manufacturers, which together manufacture approximately 25 different types of windmills. Even though a windmill has been approved by the Riso Test Station for Smaller Windmills, that does not guarantee the mill's effectiveness. It only means that the windmill has met conditions required by the Housing Ministry for government subsidy. The approval only covers the windmill itself and the materials of which it is made.

"Unfortunately, some manufacturers promise more effectiveness than the mill can actually deliver," said Henrik Stiesdal, a consultant in the organization Danish Wind-Power Service.

"Even though the manufacturer has measured a windmill's production over a period of 3 months, you can easily be cheated considering its effectiveness on an annual basis. The wind does not blow at the same rate the year round, and the measurements could have been taken during a period of much wind."

Get a Guarantee

"Therefore, you should make sure you get at least a 1-year guarantee, which should include assurance that the windmill will not run wild. And you must get this in writing," said Henrik Stiesdal.

"Before you start looking at various types of windmills, you should first consider whether you have a suitable place for one. The landscape surrounding the windmill should be free of obstacles and the mill itself should be at least 18 meters high in order to properly utilize the wind power. Several manufacturers construct only a 12-meter high tower, but you can get up to 50 percent better utilization of the wind by just paying another 10 percent to get an additional 6 meters. A 24- or 30- meter tower is even better, but by all means ask your neighbors before buying a larger windmill. Not all people like the looks of a windmill that size," said Henrik Stiesdal.

Besides height, the shape of the blade is also important. For some it might pay to buy a windmill with propellor-type blades, for others it could be better to get a windmill with many small blades, a so-called "wind rose."

Information About Advantages and Drawbacks

Windmill prices vary substantially from manufacturer to manufacturer, but, on the average, a windmill for home use costs about 100,000 krone . With the government subsidy, the actual price is approximately 75,000 kroner. The price of a farm windmill is around 160,000 kroner, various subsidies included, according to Henrik Stiesdal.

The organization Danish Wind-Power Service provides information about subsidies, loans, etc and it has just started to evaluate the different kinds of windmills on the market. In its newspaper NATURLIG ENERGI, the organization evaluates one windmill a month, provides economic information about it and discusses advantages and drawbacks of that particular windmill.

Can Pay

"All who contemplate buying a windmill are urged to contact us if they want to be sure of getting a windmill that will be of optimum benefit to them. It can pay to buy a windmill today if you get the right kind. We see examples of that all the time. Tax advantages and energy saved outweigh the cost of a windmill, even in the first few years of operation if you get the right windmill. Hence, the myth that you have to wait years before you can profit from a windmill does not hold," Henrik Stiesdal emphasized.

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CSO: 3102

SMALL FIRM SEEKS STATE SUPPORT TO COMMERCIALIZE WINDMILL

Copenhagen BERLINGSKE TIDENDE in Danish 15 Feb 80 p 8

[Text] There is great international interest in a new, noiseless windmill, developed by the Danish Master Smith Organization. Authorities and business representatives from Alaska, Minnesota, Italy and West Germany have approached the Danish Master Smith Organization concerning the new windmill, because Denmark is the leader internationally when it comes to wind power.

A deputation from the Danish Master Smith Organization went before the Energy Policy Committee in Parliament yesterday to ask for state support to start production and exportation of the windmill. The organization, which comprises 3,000 businesses and 16,000 employees, is asking for a grant of 20,000 to 50,000 kroner.

The new windmill, which is now being tested at Riso, will according to provisional calculations produce between 30,000 and 40,000 kilowatts per year, corresponding to 4,000 to 6,000 liters of oil. It can run 10 years without any appreciable repairs and the materials used in the construction of the windmill are so strong that they will last at least 20 years. It has a 10-meter blade span and the tower comes in heights of 12 to 18 meters. The price is 108,000 kroner.

Member businesses of the Danish Master Smith Organization are small and need to cooperate among themselves in order to develop a large-scale production. That is why the Danish Master Smith Organization is now asking for state support.

"One windmill alone represents 400 hours of work," said master smith Jens Jensen, who is a member of the organization's business committee. "The production of windmills will protect many jobs and will save energy as well as foreign currency."

A master smith in Southern Jutland developed the tower for this windmill and another master smith in Thy designed the wheel, including the gear and the generator.
8952
CSO: 3102

FEDERAL REPUBLIC OF GERMANY

OPTO-ELECTRONIC SENSORS FOR INDUSTRIAL ROBOTS

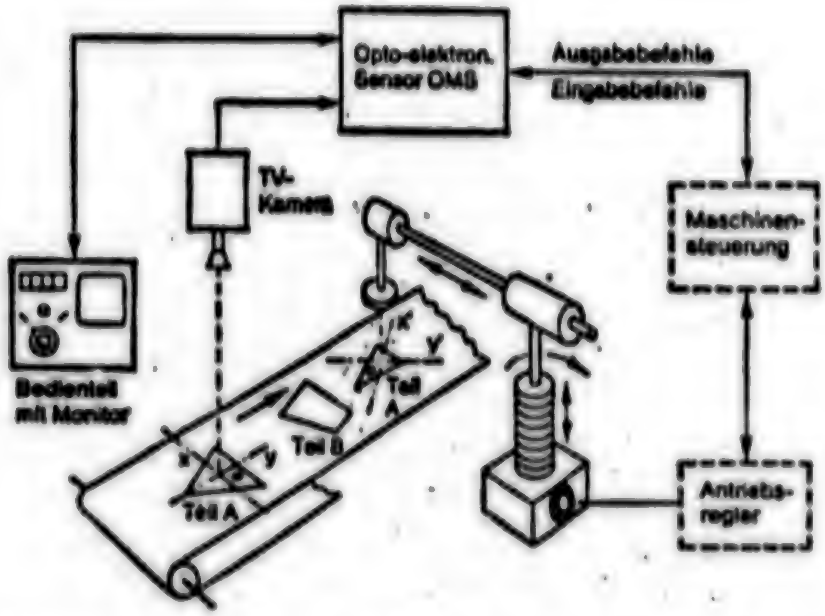
Duesseldorf HANDELSBLATT in German 19 Mar 80 p 23

[Article by Klaus Bruchmann: "Opto-Electronic Sensor and Microcomputer Confer Intelligence"]

> [Text] For about three years, serially manufactured industrial robots have been finding a place in the industrial work process: They weld automobiles together, produce television tubes, unload extrusion presses and assemble typewriters. In this, they are advantageously employed in dangerous, monotonous, and inhumane jobs. The limitation to this movement toward systemizing and humanizing has been that, until now, these robots were unable to see.

Of course, it is possible to transmit pictures using video technology, but the viewer himself must be able to see. A team of scientists and engineers of the electronic firm of Brown, Boverie and Cie, in Mannheim, has succeeded in developing an opto-electronic sensor which functions both as picture processor and viewer. For this, new and efficient electronic microcomputers and storage elements are used.

The opto-electronic sensor observes the workpiece scene with a video camera. There, it "recognizes" workpieces, in that it can differentiate one object from another. In addition it determines the position coordinates of the recognized workpiece. If the workpiece happens to be moving along a conveyor belt, for example, then the sensor also measures the speed and tracks it with the aid of an of an internal clock.



Schematic indicating function of electro-optical sensor (OMS). The picture taken by the camera is processed and converted into logical commands for machine control and robot arm actuation in the OMS.

Key:

1. Service console with monitor
2. TV camera
3. Opto-electronic sensor
4. Output commands
5. Input commands
6. Machine control
7. Arm-drive control
8. Part A
9. Part B

Identification, position and motion data in the sensor are converted into logical commands by a microprocessor and are used to control the drive motor of a robot's arm, for example.

At the start of the job, the workpiece is introduced to the sensor during a learning process. The introduction is accomplished by showing the sensor a perfect sample in a selected reference position. Identification features and position coordinates are stored as reference quantities. An alpha-numeric label is assigned to the reference value, for example typebar 12. Thereby it is possible for the sensor to store in its memory, as in a card file, the features of several workpieces.

If, during the workprocess, the sensor sees various workpieces in the video picture, it compares them with those of the stored file. If a match is accomplished, the workpiece is considered to be identified, and the appropriate output commands are sent to the machine control and the actuator of the inudstrial robot.

In order to get by with the smallest possible number of recognition features--these use up storage space--the sensor works instead with two-tone, or binary, pictures. By assigning a signal threshold, the picture is decomposed into two brightness levels, white and black. As a second step, using the resulting negative silhouette, the white area is evaluated point by point. For counting, an electronic 20-bit counter is used which permits up to 1024 x 1024 picture points to be counted. In this, white corresponds to binary 1 and black to binary 0.

The sum of all the white points is a measure of the surface, a primary recognition feature of the workpiece. This feature has a special property: It is invariant under rotation, that is the silhouette area is always the same even when the workpiece is rotated under the camera.

With the surface area alone, only a very large difference between objects can be detected. Therefore, additional invariant-under-rotation features which are mathematically determined from the picture surface are brought into play. Thus, it is relatively easy for the microcomputer to calculate the area moment by integrating the points and to calculate the area centroid by dividing the area moment by the area. The area moment and the coordinates of the area centroid constitute additional recognition features. The radius of the least circle which will circumscribe the boundary of the object is also a very typical characteristic for each workpiece. For determining the rotation of the workpiece, additional circles are inscribed within the silhouette, and the resulting signal variation betwen black and white on the picture contour is stored in the form of an impulse diagram.

Thus, for identification and position and rotation determination, the picture points themselves are not used, but only a few results from processing the picture. This not only reduces the required memory size but also makes recognition possible in fractions of a second since only a few memory locations have to be accessed by the microprocessor when making a comparison.

Opto-electronic sensors can compare printed characters. They will take over an additional field of application in checking pallets in forwarding companies, breweries and in food warehousing. Since commercial video cameras can be used for picture transmission, the size and sharpness of the picture depends primarily on the selection of the objective lense. Thus, it is possible to identify and measure objects from the size of a blood corpuscle to the size of a rear axle for an automobile using the opto-electronic sensor.

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FEDERAL REPUBLIC OF GERMANY

FRG'S LAENDER SUBSIDIZE RESEARCH AND DEVELOPMENT

Frankfurt/Main FRANKFURTER ALLGEMEINE BLICK DURCH DIE WIRTSCHAFT in German 8 Apr 80 p 3

[Article by ALB.: "FRG Laender Also Subsidize Research and Development; Tax Vagaries Must Be Taken Into Consideration Along With Red Tape Battle/Regular Bank Credit Sometimes Preferable to Government Loan"]

[Text] The FRG Laender are becoming increasingly involved in subsidizing research and development in industry. The main reasons for this are their general structural policy function and their efforts to attract research-intensive branches of industry. The overall scope of financial measures on the part of the Laender cannot be compared with Research Ministry outlays in particular, which amount to DM 2 billion in a single year. In 1980, all the Laender together will be providing DM 150 million at most for research and development in industry. Nevertheless, with the exception of Bremen and the Rhineland-Palatinate, all the FRG Laender have meanwhile developed special programs to support research and technology as well as the development of new products and processes. On the one hand, they are designed to supplement the federal government's own programs; on the other, the respective Land programs also concentrate on providing consulting services regarding opportunities for government subsidies. A survey follows on the most important subsidy schemes contained in these Laender programs. In the event of further interest, application should be made to the office listed, where additional information may be obtained on the specific Land program.

1. Baden-Wuerttemberg

In Baden-Wuerttemberg, the development of new products and processes is subsidized by the state under a special program.

The agent is the Baden-Wuerttemberg Ministry for Economics, Small Business and Transportation. The ministry developed and oversees the programs. The first one, in 1976, was depicted as a "Development Subsidy Program" designed to promote industry-related research and technical development. The program is administered by the Baden-Wuerttemberg Land Business Bureau where application forms may be requested. The subsidy covers the costs incurred up to the point where a product is ready to be put into mass production or a process is ready for use; included are the costs of testing and any necessary technical licensing inspection. As a rule, the subsidy amounts to 50 percent of the costs eligible for subsidization; not eligible are costs that were already incurred prior to the filing of the application. The grants are to be repaid if the project becomes an economic success within 10 years. Details involved in the administration of projects may be obtained from the Land Business Bureau, which has a special technology office for this sector. It is the intention of the Land government that notification of approval or disapproval be given within 2 months of receipt of the completed application documents.

In addition to subsidies for development, a special product-subsidy program is available for the financing of manufacturing installations. Investment costs not in excess of DM 2.5 million may be financed through low-interest loans from the Land Credit Bank covering 50 percent of the investment costs incurred. Entitled to apply are companies whose annual turnover for the preceding year did not exceed DM 150 million. Applications are to be submitted through the borrower's bank to the Baden-Wuerttemberg Land Credit Bank. A decision should be forthcoming within 2 months. In addition, Stuttgart also has a patent office where more detailed information may be obtained.

2. Hesse

Hesse has no special research and technology program as yet. The Hessian minister for economics and technology has issued a "primer on financing." Within the general framework of structural aid from the state, Hesse also gives out information on state subsidies for research and development in general. Hesse has no plans to provide special financing instruments.

3. Schleswig-Holstein

Schleswig-Holstein also has no special technology program. The ministry's most recent budget allocates DM 10,000 in technological subsidies. Consulting services are offered by the Consulting Office for Development and Technology Transfer, but within the scope of general support, this office only provides information on previously existing opportunities for government allowances for research and technology.

4. Bavaria

A technology program called the "Bavarian Technological Consulting Program" is being administered in Bavaria within the framework of support for small and medium-sized businesses. Grants for obtaining advice from expert consultants are dispensed through this special Bavarian program. These consulting costs are shared by small and medium-sized companies. The program is administered through special liaison offices that are listed individually in a brochure put out by the Bavarian State Ministry for Economics and Transportation. Complete details of the guidelines for awarding these consultation grants may be found in the BAYERISCHER STAATS-ANZEIGER, 13 July 1979, No 28.

5. North Rhine-Westphalia

North Rhine-Westphalia has had a special technology program for years. The focus is on consulting, but like Baden-Wuerttemberg there are also grants for the development of new produds and processes and for manufacturing programs. Small and medium-sized companies are given preference. Large corporations may also receive subsidies, however, if they develop and introduce desired technologies for North Rhine-Westphalia. A brochure put out by the minister for economics and transportation contains the details of the program as well as the guidelines for subsidizing projects. The technology program and the guidelines are available upon request from the North Rhine-Westphalian economics minister. It is also necessary to fill out a considerable number of applications if a company is to enjoy various financial allowances.

6. Hamburg

The Hanseatic City of Hamburg has established a special program to subsidize research and development by small and medium-sized companies. It is designed to subsidise special projects of small and medium-sized Hamburg companies via payments from Hamburg's budgetary appropriations. These support measures are meant to supplement federal measures. It is for this reason that application assistance is authorised. For instance, a grant of up to DM 10,000 that is not subject to repayment may be paid to a company if it engages its own consultant to fill out the applications for research subsidies. In addition to the federal funds, special follow-up financing is possible out of Hamburg's budget funds; however, the maximum amount is DM 150,000. Hamburg also provides direct research and development subsidies for special Hamburg projects, but not in excess of DM 150,000. Details may be obtained from the Hamburg office listed.

7. Berlin

Berlin has a very extensive research and development subsidy program which has been strengthened in recent years, chiefly through the efforts of the Senat. Berlin's specific programs for this sector may be requested at the address given. In addition, for years there has been special federal support for Berlin through direct grants for research and development administered by the Berlin Chamber of Industry and Commerce. A great number of subsidy options exist here -- through the Berlin Senat in particular.

8. Lower Saxony

Lower Saxony is presently working on a special technological subsidy program. A Lower Saxony Land-level development subsidy program has been in existence since 1975 even though there has been minimal demand for it. Under its terms, original products or processes developed by Lower Saxony companies with up to 500 employees or doing an annual business of DM 15 million may be subsidized out of Land funds. Application may be made through government authorities for a nonrepayable grant amounting to 15 percent of the costs recognized as eligible for subsidization. Early passage is scheduled for the new technology program, for which substantial allocations have already been made in the 1980 budget. Accordingly, the program is expected to be similar to those in Baden-Wuerttemberg, North Rhine-Westphalia or Berlin.

9. Saarland

Here there are research and development investment grants designed especially for the Saarland. In addition to application forms, the district has of course also developed its own principles for administering these programs. Details as well as application forms may be obtained from the minister for economics and transportation, Department for Industry, at the address given.

Summary: The federal research programs have given the Laender incentive to develop their own programs to support research and development. The volume of administrative files is thus growing at a tremendous rate, especially considering the relatively small amount of funds available. Each Land apparently takes pride in setting up a special program with its corresponding forms and principles of administration. This kind of venture -- and mainly the cost -- is worthwhile for the applicant company only if it launches such projects frequently. It has to expect substantial costs relating to the applications, expenses that are internal as well as external.

Before starting this kind of application process, a company should first take full advantage of the tax supports that exist, such as the investment credit for research and development and the personnel credit for research and development administered for the FRG Economics Ministry by the Working Group of Industrial Research Associations. Only after this avenue has been exhausted should application be made for special subsidies from the Laender. Besides the considerable red tape connected with the application process and administration of the funds, there are also tax implications that have to be given close attention. The investment credit is virtually tax-free income. The many different kinds of repayable loans are treated very differently in terms of taxes. It could be that a company would do better with regular bank credit than with a repayable loan from the FRG Economics Ministry or a Land ministry. The tax aspect is constantly overlooked initially by many applicant companies; it is only after their request has been approved that annoyance sets in.

Research and Development Support by FRG Laender -- Status as of March 1980

Land	Measure	Address
1. Baden-Wuerttemberg	a) Loans; business subsidies	Baden-Wuerttemberg Land Credit Bank Schellingstrasse 15, 7000 Stuttgart 1 Tel: 07 11 / 2 05 71
	b) Subsidies for development of new products and processes	Baden-Wuerttemberg Land Business Bureau Technological Consulting Service Kanzleistrasse 19, 7000 Stuttgart 1 Tel: 07 11 / 20 20 616
	c) Patent Office	Tel: 07 11 / 20 20 558
2. Hesse	Consulting services	Hessian Minister for Economics and Technology, Dept II b 5 Post Office Box 3129, 6000 Wiesbaden 1 Tel: 0 61 21 / 81 53 81
3. Schleswig-Holstein	Consulting services	Consulting Office for Development and Technology Transfer (BITT) Lorentzendamm 24, 2300 Kiel 1
4. Bavaria	Technological Consulting Program	Liaison offices of Land business institutes, IHK [Chamber of Industry and Commerce] Information Office of Bavarian State Ministry for Economics and Transportation Prinzregentenstrasse 28, 8000 Munich 22 Tel: 0 89 / 2 16 21

5. North Rhine-Westphalia	Technology program	Minister for Economics and Transportation North Rhine-Westphalia Post Office Box 1144, 4000 Duesseldorf 1 Tel: 02 11 / 83 02 432
6. Hamburg	Research and development subsidy program	Bureau for Economics Alter Steinweg 4, 2000 Hamburg 11 Tel: 0 40 / 3 49 12/449
7. Berlin	a) IHK-sponsored Berlin research subsidy program	Berlin Chamber of Industry and Commerce Hardenbergstrasse 16-18, 1000 Berlin 12 Tel: 0 30 / 31 07 21
	b) Berlin subsidy program	Senator for Economics and Transportation, Dept II, F Martin-Luther-Strasse 105, 1000 Berlin 62 Tel: 0 30 / 78 33 418
8. Lower Saxony	Subsidies for development of new products and processes; Grants	Details on government authorities: NIEDERSAECHSISCHES MINISTERIALBLATT, No 31, 1975, p 946 or: Lower Saxony Minister for Economics and Transportation Post Office Box 101, 3000 Hannover 1 Tel: 05 11 / 19 01
9. Saarland	Grants	Minister for Economics and Transportation, Department for Industry Hardenbergstrasse 8 Post Office Box 1010 6600 Saarbruecken 1 Tel: 06 81 / 50 14 119

7458
CSO: 3102

PRESENTATION OF COMES BUDGET FOR 1980

Paris AFP SCIENCES in French 21 Feb 80 pp 18-20

[Text] Paris--Resources derived from biomass, solar housing and water heating, and photovoltaic conversion are priority items of French solar policy, according to a statement made by Henry Durand, chairman of the Commission for Solar Energy (COMES), on 18 February during the presentation of the budget of this organization established on 23 January.

The budget is set at 152 million francs, and the distribution of expenditures for 1980 is as follows (in millions of francs):

--Housing	24
--Biomass	34
--Photovoltaic	28
--Thermal and thermodynamic	28
--Meteorology and aeolian power	4
--Training, information, documentation	6
--Policy aimed at promoting industry	5
--Operation and investment	23
Total	152

COMES' budget is supplied principally by income emanating from the Ministry of Industry (140 million francs), to which are added supplementary amounts (Ministry of Cooperation, FIAT and Corsican EPR) for a total of 12 million francs.

COMES' headquarters will be in Valbonne (Alpes Maritimes), and the laboratory for research on solar energy, subordinate to the CNRS [National Center for Scientific Research], is to be ready in 1981 in Ajaccio (Corsica). The commissariat's manpower will increase from about 30 in 1979 to about 50 in 1980.

The national solar budget for 1980 is estimated at 400 million francs, excluding strictly private initiatives. A total of 150 million francs will come from COMES, 130 from other state expenditures (the ministries of agriculture, environment, foreign affairs and the like) and 120 million francs from secondary financing (local communities, firms and the like).

As a comparison, the expenditures anticipated in the American budget will slightly exceed 2.8 billion francs. Thus, the ratio between the two budgets is tending to decrease. It was 10 during the last fiscal periods and has dropped to about 7 in 1980.

According to Durand, France ranks second in the world in the promotion of solar energy, the third being the FRG with a budget of 250 million francs for 1980.

For the year 2000, it is anticipated that France's energy needs will be the equivalent of 300 million tons of oil. According to Durand, solar energy would contribute 5 percent of this figure.

A total of 80,000 jobs should be created between now and the year 2000 by the development of solar energy and about 60,000 between now and 1985.

The following are the various French programs:

--Housing:

1980 objective: 60,000 water heaters (of which 40,000 are in the HLM /Low-Cost Housing Program/) or three more than in 1979.

1985 objective: 500,000 solar water heaters, 30,000 solar constructions.

As for industry, 50,000 collector plants are in operation in 1980, and 80 researchers from the public and private sectors are working on the development of mathematical models. Moreover, nearly 1,000 professional solar experts are to be trained each year.

Government action will be limited principally to the installation of 25 solar swimming pools, architectural assistance in connection with 5,000 houses and assistance in the installation of 40,000 water heaters.

--Solar thermodynamics:

Experimental projects:

--100 low-temperature installations;

--100 kW medium-temperature power plant in Corsica (THEK program--at the end of 1980);

--high-temperature MW "THEMIS" power plant on the Targassone site (Eastern Pyrenees), facility opened in September 1979 and scheduled to begin operations at the end of 1981. This power plant will rank second in the world in power and first in Europe.

1985 objective:

--to develop an industry in low- and medium-temperature technology, 4 MW per year as its peak;

--experiment with high-temperature systems, 1 to 10 MW peak.

--Photovoltaic:

The French market is still unpretentious, four times smaller than the American market but five times larger than the German market. Its peak capacity in 1980 is 500 kW of which 90 percent is for export. There are 500 industrial installations in France and the Third World (transmission relays, radio in Alpes Maritimes, aerial-navigation beacon in Gironde, solar pump in Corsica).

1985 objective:

--to obtain a peak capacity of more than 5 MW at less than 13 francs per peak watt.

A lot of apprehension was felt in 1979 with regard to the silicon market. "In view of a threatened shortage, the French program will have to get on the 'silicon-material' bandwagon without delay," Durand asserted.

--Biomass:

"This is the main card to play," the COMES chairman stated. "With 14 million hectares of forests (40 percent of the EEC's forest area), the use of biomass is highly indicated for metropolitan France and the DOM-TOM /Overseas Department-Overseas Territory/.

In the industrial sphere, wood heating, weak-mixture gas engines, experimental production of biogas through fermentation, and research on methanol are the principal areas of development.

1985 objective:

--to produce the annual equivalent of 5 million tons of oil compared with the current 2 million tons, or a saving of 5 billion francs in 1985 at the current monetary value.

International-DOM-TOM-SAHEL Program

This program is to provide priority answers to a certain number of needs: the ministries of health, agriculture (pumping, irrigation, stock-breeding, waste reclamation), communications, education.

Thus, Africa's largest photovoltaic generator (10 kW-25 kWh per day) was built in Mali for the San Hospital (cost: 1.3 million francs); a 33 kW solar power plant is operating in Saudi Arabia near Riyadh; a system for producing gas from cocoanut husks was installed in Polynesia; and a generator for for scholastic TV was installed in Niger.

8568
CSO: 3102

ALTERNATE-ENERGY OBJECTIVES, PRIORITIES OUTLINED

Paris LE FIGARO in French 20 Feb 80, p 7

[Text] Some 40,000 jobs could be created in France between now and 1985, and almost 80,000 in the year 2000, by the solar and renewable energy industries. Henry Durand, President of the Solar Energy Commission (COMES) gave this estimate yesterday, 2 years after the creation of that organization. The photovoltaic industry and that of the collectors, the gathering of straw, wood, and liquid manure would be the basis of this creation of jobs. Today the priorities of the COMES are the application of solar heating to the home, and the search for products for energy creation, the biomass. The goal is still to ensure 5 percent of energy needs by the year 2000 in this way.

COMES in the 2 years of its existence has risen from 3 to 45 people. Its budget has risen annually by 30 percent to 40 percent, rising in 1980 to 152 million francs in the strict sense and 400 million when one includes the contributions of other ministries, industrialists and local collectives.

Solar warm water for sanitary use is already no longer utopian. Some 20,000 homes are supplied with it. The goal of the government is to triple this market in 1980 to reach 500,000 solar water-heaters in 1985. For that, contracts will have to be concluded between the commission and the housing builders. Likewise an aid procedure will be authorized for prime contractors for prior studies of their projects, including a solar variant. As is known, a contest affecting 5,000 solar-heated homes has just been launched. If the warm water collectors are adequate, arrangements permitting heating should be refined. The completion of 5,000 houses will certainly make progress possible in this field.

Likewise 10,000 craftsmen--among the 45,000 plumbers, heating contractors and electricians--will be trained in this technology between now and 1985. It is thought that the market could absorb 50 advanced solar technicians per year. In order to train them, an experimental course of instruction will be established in the spring of 1980 at the U.T. [Technical University] of Evry. The experiment will then perhaps be extended to a UT in the Midi and in the West.

While the French thermodynamic program (power plants at Carcasonne, Ajaccio, etc.) is being carried on, industrialists are penetrating deeply into photovoltaic conversion.

After RTC [expansion unknown], it is now France-Photon, a subsidiary of Leroy-Somer, Photo-Watt, subsidiary of CGE [General Electric Company], Sahel, joint subsidiary of Thomson-CSF and Exxon, which manufacture or distribute the photovoltaic cells and modules. Sales are 90 percent for export, but a national market is also beginning to take shape for the supply of electricity to mountain retreats and telecommunication stations. One after another, the forest fire stations of the French Midi and Corsica are having their batteries charged by photopiles.

Green or biomass energy will therefore be one of the priorities of the COMES. The 1985 goal calls for 5 million TEP [petroleum tons equivalent] compared with 2 million at present. Twenty million francs will therefore be committed in the first trimester of 1980 compared with only 2 million in 1979. One example: the first French energy crop is going to be started at Arles: this is Provence cane. When burned it will provide gas which will make it possible to dry the lucerne in summer and heat the greenhouses in winter.

Wind energy is still stumbling in France. The United States, Germany, Sweden and Canada have moved far ahead of us. The most noteworthy event has been the completion, at Ouessant, for EDF [French Electric Company] of a 100 kilowatt machine. COMES nevertheless believes that wind energy is presently competitive at isolated sites for small and medium capacities, and as for wind-generating plants of medium and large capacities supplemented by small diesel grids. This is why COMES wants to launch a national plan between now and 1985 for developing wind-generating plants of small and medium capacities and experimenting with a large wind plant.

6108
CSO: 3102

NEW SCIENCE, RESEARCH POLICY CRITICIZED

Paris LE FIGARO in French 21 Feb 80 p 12

[Text] The National Foundation of Autonomous Higher Education and Research Unions yesterday issued a statement in a press conference on the measures published during the past few months on the subject of science and research policy. "As the name of our organization indicates, we have chosen to be autonomous," stressed Mr Malaise, research expert in the CNRS [National Center for Scientific Research] and member of the board of INSERM, speaking in the name of the Autonomous Scientific and Technical Research Trade Union (SARSET). "This means that we have not been systematically opposed to, or systematically favorable to the measures taken by the government." Bernard Furth, secretary-general of the SARSET, stressed the dangers which imperil "a French research artificially separated between basic research entrusted to the universities and to the CNRS and applied research absorbed by industry."

Perhaps one allusion to the appetites shown by Andre Giraud, minister of industry, during the last few weeks with respect to "the research package" were government credits distributed simultaneously to the secretary of state for research, to the Ministry of Universities, which has the CNRS under its aegis, and the various ministries on which specialized organs such as INSERM and INRA [expansion unknown] depend. Bernard Furth still thinks that "basic research is very quickly risking isolation from all contact with application, and especially, not receiving the financing which its status as the forefront of research requires." In the strengthening of the capability for assessment on the part of the Delegation for Scientific and Technical Research (DGRST) he therefore sees the only means of establishing a programming of the whole range of research activity. He thinks that the CNRS should play a role as the hinge organism between the university and industry, due to its executive established by the recent decrees. Beyond this aspect of scientific policy, the main concern of responsible officials of SARSET remains "preserving the function of research, its autonomous and specific character."

Nevertheless Christian Benezech, president of the Federation of Autonomous Trade Unions, has insisted that "if preferential vocations between researchers and the universities continue to exist, there should no longer be researchers who never teach, nor teachers who have never done research." "The apprenticeship of research," he recalled, "is accomplished in the university, which alone can display the whole scope of a discipline, its methods and its goals."

Struck by the hyperspecialization of the researchers of the CNRS, Christian Benezech thinks that "flows" between the CNRS and specialized organizations on the one hand and the university on the other hand, are indispensable. "After 1969," Professor Canlorbe emphasized, "the autonomous trade union of medical instructors had stressed the necessary link between clinical research, instruction, and basic and applied research."

The obligatory mobility established by the decrees will not, according to responsible officials of SARSET, bring a real solution to the problems of mobility of researchers from one subject to the other, from one laboratory to another, and from one profession to another. According to them, it is indispensable to eliminate the obstacles, especially with regard to legislation, to mobility from one type of research to another, from the university to the CNRS, from the public sector to industry, etc.

"Alone among all the great Western powers, France has created a body of statutory researchers independent of the university, who are under contract to the government, while the university employees are titular civil servants. And research should no longer be a profession which one exercises by statute, full time, throughout one's whole life, but a job which one performs either full time or part time, during all or part of one's career."

A last point: the SARSET fears that by setting at 27 years the age of admission to the CNRS, the measures taken may prevent young people from having "the time to prove themselves." He therefore proposes the elimination of the grade of junior researcher, direct entry into the grade of "research assistant," and the creation of study grants equal to the salary of "independent researcher," which would enable young people to reveal--or find--their true vocation.

6108
CSO: 3102

FRANCE-QATAR TECHNOLOGICAL AID, ECONOMIC COOPERATION SET UP

Paris LE FIGARO in French 25 Feb 80 p 9

[Excerpt] The state of Qatar has set up a reciprocal investment with the French company C. d. F. Chimie. Qatar has invested in a 40 percent participation in the French company's plant at Dunkerque, which was officially inaugurated by the minister of finance and petroleum, His Excellency Shaykh Abdulaziz bin Khalifa, and started up in May 1979. Reciprocally the French company has a 16 percent share in the project of the Qatar Petrochemical Company at Umm Said.

Cooperation With French Industry

Thanks to this reciprocal investment, Qatar can train its own personnel in the Dunkerque plant, and in addition learn both on the production level and that of sales techniques. At the same time the investment of C. d. f. Chimie in the Qatar project ensures that its management will be motivated in helping the creation of a prosperous plant in Qatar.

The economic presence of France in Qatar is likewise increasingly visible in fields as varied as desalination plants (Ras Abu Aboud) built by SIDEM the prefabricated house factory (QUAPREFAB) built by the ARCOMAT company, and high tension electrification by the old and well-known company Saunier-Duval.

In the field of know-how and consultation, SERETE has provided 18 preliminary studies on the establishment in the country, under the direction of the Technical Center for Industrial Development, of large and medium-sized industries.

The growing French penetration into the market for retail articles also should no longer be ignored: as witness Peugeot, Renault, and Citroen automobiles (about 800 vehicles per year), and many articles such as perfumes (all brands are represented), women's and men's clothing (Ted Lapidus, Christian Dior, etc.), watches and jewelry (Cartier, etc.), and food products (Fauchon, Fleury-Michon, etc.).

In all the developing countries, technical progress depends upon the acquisition of technology from abroad, for they cannot lose time developing local technology, whereas the developed countries are always advancing. The policy of the emir, which consists of obtaining technological assistance from a partner which benefits both countries, is a model of what could be achieved if the industrialized countries and the developing countries combined their capabilities, as the North-South dialogue envisages, but has not yet been realized.

It was in this sense that his highness the emir noted, during an official visit in France:

"Qatar was one of the first countries which welcomed favorably your initiative aimed at establishing a constructive dialogue among representatives of the industrialized petroleum consuming countries, the petroleum-producing countries, and the developing countries."

Actually the state of Qatar is full of hope in the fact that the positive attitude of France towards the Arab world will have its fruits not only in the North-South dialogue, but also in the conduct of the European initiative for the search for a solution of the Middle East crisis centered on the situation of the Palestinians. Such a solution would clear the way to higher levels of cooperation between the two regions.

The Visit of the President to Qatar

His highness the emir spoke to President Giscard d'Estaing in Paris last September, and the planned visit of President Giscard d'Estaing to Qatar will provide an opportunity for the continuation of a friendly and constructive dialogue, and for the search for possibilities of cooperation for the mutual benefit of both nations.

6108
CSO: 3102

BRIEFS

RENAULT EXPERIMENTAL CAR DESCRIBED--"EVE," Elements for an Economic Car, is an experimental car on which the state-owned company, Renault, has been working for 6 months. It resembles the Renault 18 TL and has the same motor; but it is expected to consume 25 percent less gasoline. To achieve this result, the engineers are counting on improving the automobile's aerodynamics and making it lighter by using such materials as aluminum, plastics and special steels. They are also expecting to reduce resistance in the circular tire movement. However, they particularly hope to achieve a perfect motor-transmission gearing arrangement. For this purpose, they are using a longer gear shaft than those used on current models, and it is controlled by an electronic microprocessor. The processor simultaneously controls the transmission and motor in accordance with manipulations made by the driver and the vehicle's operating conditions. "EVE" will be perfected within a year. According to its designers, in addition to being economical, it is expected to have the same performance features, silent operation, comfort and safety as models which use much more fuel. [Text] [Paris SCIENCES & AVENIR in French Jan 80 p 32] 8568

CSO: 3102

S&T RESEARCH IN ITALY, PUBLIC FUNDING LOW

Government Report

Rome IL TEMPO in Italian 22 Mar 80 p 19

[Text] The presence of Ireland in the European Community saves Italy from winding up in last place in terms of public spending for research and development. Otherwise, Italy would have slipped to a second-rate country, a situation which is very much in contrast with Italy's position among the most highly industrialized countries.

The data were recently released by the CENSIS (Social Investment Study Center) and they are really quite discomforting. In 1977, the last year shown, Italy's per-capita expenditures for research and development came to 8.4 "European accounting units," corresponding to 5,367 lire, at 1970 prices. Italy is not at the very "tail end" since Ireland's per-capita spending in this sector is 4,729 lire. But that is not all.

Italian spending for research and development is more than one-third less than the average for the European Community which is 27.1 "accounting units" and that is equivalent to 17,317 lire. At the head of the list in the European Community, we have West Germany with 24,346 lire per-capita and France with 22,940 lire.

The situation in Italian public spending in terms of the capital account (in other words, funds intended for productive investments) is definitely worse when compared to the domestic gross output, again looking at 1977. Excluding Luxembourg, Italy is in last place in the Community with 0.43 percent. The average figures for the Community are more than twice as high (0.95 percent); Holland is in fourth place and exceeds the European average (0.99 percent). First place on this list is held by Great Britain with 1.21 percent.

The study prepared by the CENSIS reveals that, for a period of 8 years, from 1970 until 1977, Italy's highest rate was recorded at the start of that period of time, in 1970, with a figure of 0.46 percent of the gross domestic output. In all of the other countries, the tendency is generally upward or at least it is not "declining," as in Italy.

Minister Comments

Rome IL TEMPO in Italian 23 Mar 80 pp 1, 17

[Article by Vito Scalia: "Scientific and Technological Research Must Be Stepped Up"]

> [Text] Yesterday we published data supplied by the CENSIS on public spending in Italy for scientific research; according to the data, Italy is in next to the last place among the nations of the EEC. Minister Vito Scalia comments on this subject.

The accurate study conducted by CENSIS on public spending earmarked in Italy for research and technological development, has the merit, among other things, of bringing out the scarcity of funds devoted to this delicate and fundamental sector. The calculation comparison used by some newspaper in reporting the news of this survey ("sliding back to the status of a second-rate nation") should cause us to reflect with extreme seriousness about what we want Italy to become, how we want Italy to be looked upon within the European Community, what civilian development goal we must set for ourselves. It must be said right away that research does exist in Italy and is qualitatively among the best in quite a few sectors; it must be noted that many deficiencies which exist now cannot be blamed upon researchers or upon institutes because the work done is worthy of the highest consideration and the results are absolutely creditable; finally it must be recalled--as I underscored in the Chamber of Deputies in presenting the report on research--that "the essential weakness resides in the absence of widespread management capacities and in the absence of a concrete connective fabric capable of inserting the 'system' of research within Italy's development model."

We thus do not have a research policy as such, in other words, spending in this sector is widely scattered; we have "corporative" tendencies; there are dangers inherent in the presumed "primacy" of science when compared to politics; there is a lack of technology transfer structure and there is a blurring and avoidance of competence and authority.

This is the context I presented in my report to the Chamber's Industry Committee and that was the situation I found myself facing.

I must stress the fact that this scenario was indispensable in order first of all to establish the authority needed, to prevent the excessive scattering of funds, to eliminate duplication of efforts, and, finally, to push through a strategy aimed at spelling out public spending in this sector by indicating specific financing criteria.

There is no doubt that overall spending for research in 1979 increased 23.5% as compared to 1978, with a budget allocation of about 2.4 trillion lire and that, out of that amount, 1,042 billion (in other words, 20% more than during the preceding year) were completely allocated to the public sector. But there is no doubt either that a comparison with funds earmarked for research in other European countries will find Italy still at a disadvantage.

If one might introduce an element of levity into this serious situation, one might say that we are third from the end of the line, still ahead of Denmark and Ireland.

The small amount of funds earmarked for research--in spite of the increase we mentioned--points to the motivations which should persuade Italy to make a real qualitative and quantitative jump in this sector, always keeping in mind that almost all of the other European nations keep increasing their research spending at a certainly faster pace than Italy.

But we must admit that great strides have been made in rationalizing public and private activities in this sector, always within their respective areas of autonomy. The approval of the Space Plan, with an expenditure of about 200 billions over a period of 5 years in a very delicate sector which is continually developing, enables us not only to keep up with other nations but above all to introduce elements and criteria of planning which give us reliable targets for our industries. If to that we add the agreement finally worked out with ESA--calling for Italy to get orders worth about 37 billions--then we get a realistic picture of Italy's commitment over the next several years in one of the technologically most sophisticated sectors. But the real area where Italian research must express all of its capacity resides in the energy sector. To enable the country to face the dramatic energy challenge, by decision of the Cabinet--which assigned responsibility for this to the Ministry of Scientific Research--we are going to submit the National Plan for Energy Research to the CIPE [Interministerial Committee for Economic Planning].

This plan will run for 5 years and is now in an advanced state of completion; it is a classical example of the way to assign authority because all agencies--both public and private--are here called upon to make their maximum contribution.

Research is not an isolated thing, separated from the social and economic context of the country; it also involves the industrial application of technology. The recent solution worked out regarding the funding provided for under the industrial conversion law is an example of the contribution which applied research can make to the country's growth, involving both direct and indirect effects.

Here again it was necessary to face the problem of coming up with a precise political choice which I believe was quite proper in finally assigning priority to the allocation of the 600 billions provided for under the law for small and medium enterprises as well as those located in the South of Italy. The motivation for this choice is clear, keeping in mind the decisive role played by the small and medium industrial establishments in the Italian economy.

But everything that has been done so far cannot be continued without the implementation of the institutional framework within which we must place Italy's research strategy, that is to say, the institution of the Ministry for Scientific and Technological Research. This missing link--as one can easily see--will have its effects in a totally negative manner on all of the directions we are moving into, first of all taking effectiveness away from the actions carried out so far in order to close the Italian technological "gap."

On the basis of this conviction I proposed to the Prime Minister a draft for a law establishing the Ministry.

I believe that all of us together, parliament, the government, and the political forces, have the duty of giving Italy's researchers and young people who want to undertake this highly significant profession certain precise signals so that they may be able to do away with the profound moral tension that certainly prevails among individuals active in this sector now.

Vito Scalia, Minister of Scientific and Technological Research.

5058
CSO: 3102

INCREASED USE OF COAL PLANNED FOR POWER PLANTS

Paris AFP SCIENCES in French 28 Feb 80 pp 30-31

/Text/ The Hague--All electric power plants to be built in the Netherlands between now and 1990 are to use coal exclusively, according to a note sent by the Dutch minister of economy to parliament and published on 26 February.

To carry out this program, which is still to be discussed, means that, 20 years from now, 40 percent of the power produced in the Netherlands will come from coal, representing an annual consumption of 26 million tons. The current consumption is 1.5 million tons.

The government has announced its intention to devote a total of 750 million guilders (1.5 billion francs) between now and 1985 to studies on the use of coal in power plants and industry.

The government is expected to reveal its intentions with regard to the use of nuclear power within a few months, and this will be the subject of "broad national discussion." Due to its sizable natural-gas resources and the interconnection of its electrical network with those of neighboring countries, the Netherlands has not resorted to nuclear power up to now, except on an experimental basis (its capacity not exceeding 500 MWe).

8568
CSO: 3102

FUNDS FOR RESEARCH IN ELECTRONICS

Stockholm TEKNIK I TIDEN in Swedish No 4, 1979 p 21

[Text] The STU, the National Swedish Board for Technical Development, will need 78 million kronor for research in the field of electronic and electrooptic components during the next 3 years. This involves a trebling compared to previous budgetary frameworks.

The funds will be used for the development of knowledge, i.e., primarily, for research at the various universities and research institutes, however, to an increasing degree, in cooperation with the Swedish electronics industry. This information is contained in a proposal submitted to the government by the STU, together with the request for supplementary funds.

Electronics is now generally coming to be regarded as perhaps the most important factor of renewal within the Swedish trades and industries. The majority of other reports have come to the same conclusions.

Narrow Basis of Knowledge

Sweden today has an electronics industry with 60,000 employees and a turnover of 8-10 billion kronor--an industry which thus is comparable, for example, to the iron and steel industry. But for the electronics industry to keep up in the international development, for example, within the semiconductor area, the basis of knowledge, in many respects, is far too narrow.

For the development of, first of all, integrated circuits and thus continuous production and, above all, construction techniques, the resources, at present, are insufficient for us to keep our position in the eighties and the nineties.

It is characteristic that semiconductor technology and electrooptics, together with, for example, pharmaceutical technology, are the areas in which the results of basic research most rapidly are put into commercial use. This concentration on basic competency development and the development of knowledge are a natural first step in a broader development of electronics within the Swedish trades and industries.

Other types of measures to further the Swedish electronics industry will, later on, be proposed in a government report, studying the present and future possibilities of the Swedish electronics industry.

High Degree of Preparedness

Sweden cannot concentrate on all areas of electronics, we are too small for that. But we must have a high degree of preparedness within the universities, and we must concentrate on areas which are considered to have major future industrial significance, but we must start from areas in which Swedish universities have some kind of unique competency.

The first efforts will be directed toward the areas of semiconductor physics, integrated circuits, optical communication, electrooptic picture components, as well as other types of direct semiconductor components as, for example, sensors and donors.

7262
CSO: 3102

SWEDISH AUTO INDUSTRY AGAINST THE CURRENT

Stockholm SVENSKA DAGBLADET in Swedish 15 Mar 80 p 15

[Article by Anders Hultman]

[Text] Energy crisis? Gasoline shortage?

"Certainly, but people want cars which will seat five people. So we continue making them. Things will go very well."

One might think that this would be the reasoning of the world's automobile industry when looking at this year's biggest display window: the automobile fair in Geneva. The new cars displayed here are safer, better equipped than earlier and often consume less gasoline. But only some of them have become smaller.

This may be a false picture. The eye is being misled by all these specially built Italian luxury sports cars in small series as well as by the elegant representatives who are removing the last dust particles from the lacquer of their cars.

Surely, the cars we see in the streets keep getting smaller. American cars are shrinking rapidly. And Renault, Fiat, and Ford are pumping millions of their small cars into all of the European markets. It is not only the Swedes who are feeling a tightened economy.

But there still are some who are going against the current, viz. Volvo and Saab, two of Sweden's biggest export enterprises.

On an international scale, the two companies are medium-sized automobile manufacturers, assembling several hundred thousand cars of the 30-35 million cars which are built in the world each year.

They will never be able to start building small cars since the competition on these cars is too severe. But they cannot either give up the production of passenger cars. That would be disastrous to the employment situation in Sweden.

That is why Volvo and Saab have chosen to continue concentrating on five-seat, well-equipped, safe, and relatively expensive cars in the eighties (and also in the nineties). At the same time, they will be cooperating more and more closely with the big automobile manufacturers to get longer series of engines, wheel suspensions and other special equipment, thereby cutting their costs.

Volvo is showing its future profile at the Geneva fair with its Concept Car. Saab does it with its new 900 Turbo Sedan.

Both manufacturers will be introducing a new automobile in serial production in the mid-eighties. These autos will become a little lighter, will be consuming less gasoline and will become safer--but they will maintain a size, providing comfort for well-to-do Europeans and Americans who make Swedish automobile production commercially feasible.

The future will show if Volvo and Saab will succeed in their efforts. It is clear that they will encounter competition from another medium-sized (and very progressive) automobile manufacturer who has chosen the same road, viz. the West German BMW.

Here in Geneva, the BMW representatives seem confident. It is true that the international oil situation is uncertain and that there is a limit to how much the world's automobile production can grow. But five seats are a demand of the future, says Dr Rademacher, chief of research.

[photo caption] Volvo's Concept Car--not for serial production but launched at the Geneva Fair. The new Volvo which is being developed for serial production 'in the mid-eighties' will not become any smaller than this car.

7262
CSO: 3102

GOVERNMENT FUEL-CONSUMPTION DIRECTIVE FOR AUTOS

Stockholm NY TEKNIK in Swedish 14 Feb 80 p 3

[Article by Sven-Olof Carlsson]

[Text] As of 1985, automobiles sold in Sweden will not be allowed to consume more than 0.85 liter of gasoline per Swedish mile (10 kilometers), and, as of 1990, at the most, 0.75 liter per Swedish mile.

The new directive was published by the government last week. The goal is to be reached through agreements between the government transport council and automobile suppliers.

New processing techniques and new materials can reduce the weight of the automobile by up to one-third. That saves gasoline.

Two-thirds of today's automobile consist of steel. It would be possible to save 15-18 percent through a transition to new high-tensile steel. The saving would give a Volvo 244 the same weight limit as the old PV 544. For example, by using two-phase steel and phosphorus-alloyed steel in girder systems, fenders, tanks, and side panels, these can be made from thinner material.

Radiators of Aluminum

The amount of aluminum used in today's car is 3-4 percent. Two kilos can be saved on a radiator of aluminum. If the radiator cells are made from thinner copper material than today, with new strip folding techniques, and the rest of the radiator is made from plastic, the corresponding amount of weight is saved. The rims of wheels become 2 kilos lighter in cast aluminum than in steel. Rims of sheet aluminum save 4 kilos, or nearly half the weight of the rim.

Fenders of Plastic

Aluminum producers state that major weight savings occur when using sheet aluminum instead of sheet steel in the body.

Plastic and plastic-based fiber composites give lighter fenders and oil pans. By means of production techniques from the aircraft and space industries, reinforced plastic and fiber composites are gradually becoming available in sections for automobile bodies as well.

7262
CSO: 3102

BRIEFS

COAL GASIFICATION, LIQUEFACTION PLANTS--Two experimental plants intended for extraction of oil will be started at Point of Ayr in northern Wales. The reason is that the British government considers it necessary to develop new commercial plants for the extraction of oil and other fuels for use in the nineties. The two plants concerned, one of them for extraction of oil and the other one for gas, will daily handle 25 tons of coal with processes developed by the NCB (the National Coal Board). The experimental plants are expected to produce approximately 10 tons of fuel per day. [Text] [Stockholm NY TEKNIK in Swedish 7 Feb 80 p 14] 7262

CSO: 3102 END

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